

REMARKS

Reconsideration of the application in view of the above amendments and the following remarks is requested. Claims 4 and 21-39 are in this application. Claims 1-3 and 5-20 have been cancelled. Claims 21-39 have been added to alternately and additionally claim the present invention.

The Examiner objected to the specification as not providing support for claim 9. As noted above, claim 9 has been cancelled.

The Examiner objected to claim 10 as being a substantial duplicate of claim 4. As noted above, claim 10 has been cancelled.

The Examiner rejected claims 1-3 under 35 U.S.C. §102(a) as being anticipated by Hseih (U.S. Patent No. 6,593,607 B1). The Examiner also rejected claim 7 under 35 U.S.C. §103(a) as being unpatentable over Hseih. As noted above, claims 1-3 and 5-20 have been cancelled. For the reasons set forth below, applicant respectfully traverses these rejections as applied to new claims 21-39.

New claim 21 recites:

“a first semiconductor region of a first conductivity type;

“a second semiconductor region of a second conductivity type, the second semiconductor region lying over and contacting the first semiconductor region at a first junction, the first junction forming a first depletion region;

“a third semiconductor region of the first conductivity type, the third semiconductor region having a top surface, a first portion, and a second portion that lies between the first portion and the top surface, the first portion having a dopant concentration substantially greater than a dopant concentration of the second portion, the third semiconductor region lying over and contacting the second semiconductor region at a second junction, the second junction forming a second depletion region; and

“a layer of insulation material lying over and contacting the third semiconductor region.”

In rejecting the claims, the Examiner pointed to p- substrate layer 240 shown in FIG. 2 of Hseih as constituting the first region required by the original claims, and

n- photodiode region 230 shown in FIG. 2 of Hseih as constituting the second region required by the original claims. In addition, the Examiner pointed to p+ shallow implant layer 220 shown in FIG. 2 of Hseih as constituting the third region required by the original claims.

Hseih, however, fails to teach or suggest that p+ shallow implant layer 220 includes a first portion and a second portion that have different dopant concentrations. As a result, claim 21 is patentable over Hseih. In addition, since claims 22-33 depend either directly or indirectly from claim 21, claims 22-33 are patentable over Hseih for the same reasons as claim 21.

New claim 34 recites:

"a first semiconductor region of a first conductivity type;

"a second semiconductor region of a second conductivity type, the second semiconductor region lying over and contacting the first semiconductor region at a first junction, the first junction forming a first depletion region, the first depletion region absorbing electromagnetic radiation that represents blue light, and generating blue electron-hole pairs in response to absorbing the electromagnetic radiation that represents blue light; and

"a third semiconductor region of the first conductivity type, the third semiconductor region lying over and contacting the second semiconductor region at a second junction, the second junction forming a second depletion region, the third semiconductor region having a first portion that has a first dopant concentration, and a second portion that has a second dopant concentration that is substantially greater than the first dopant concentration, the second depletion region absorbing substantially no electromagnetic radiation that represents blue light."

As noted above, Hseih fails to teach or suggest that p+ shallow implant layer 220 includes a first portion and a second portion that have different dopant concentrations. As a result, claim 34 is patentable over Hseih. In addition, since claims 35-36 depend either directly or indirectly from claim 34, claims 35-36 are patentable over Hseih for the same reasons as claim 34.

The Examiner objected to claims 4-6 and 8-13, but indicated that these claims would be allowable if rewritten to be in independent format to include all of the limitations of the base claim and any intervening claims. Claim 4 has been amended

to be in independent format, and is believed to include all of the limitations of the base claim and the intervening claims. In addition, new claims 37-39 depend either directly or indirectly from claim 4, and are patentable for the same reasons that claim 4 is patentable. As noted above, claims 5-6 and 8-13 have been cancelled.

Thus, for the foregoing reasons, it is submitted that all of the claims are in a condition for allowance. Therefore, the Examiner's early re-examination and reconsideration are requested.

Respectfully submitted,

Dated: 11-11-05

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